



**CRITICAL AREAS STUDY AND BUFFER RESTORATION PLAN FOR**

**240 SW Francis Lane**

Tax Parcel No. 332406-9045

Acre Project #20013

Prepared by:

Acre Environmental Consulting, LLC.  
17715 28<sup>th</sup> Ave. NE  
Lake Forest Park, WA 98155  
(206) 450-7746

For:

James Edwards  
c/o LDC, Inc.  
1851 Central Place S, Suite 101  
Kent, WA 98038

July 15, 2020

## TABLE OF CONTENTS

SITE DESCRIPTION	2
PROJECT DESCRIPTION	2
METHODOLOGIES OF CRITICAL AREAS DETERMINATION	3
BOUNDARY DETERMINATION FINDINGS	4
EXISTING FUNCTIONS AND VALUES	5
BUFFER RESTORATION	6
GRASS SEEDING	7
PLANTING NOTES	7
PROJECT SUCCESS AND COMPLIANCE	8
PROJECT MONITORING PROGRAM	9
MAINTENANCE	9
CONTINGENCY PLAN	10
PERFORMANCE BONDING	10
POST PROJECT FUNCTIONS AND VALUES	10
TERMS & CONDITIONS	11
REFERENCES	12

### ATTACHMENTS:

1. WETLAND DETERMINATION DATA FORMS (2 DATA POINTS ON-SITE)
2. CRITICAL AREAS STUDY & MITIGATION MAP SHEET CA1.00

## **SITE DESCRIPTION**

On March 25, 2020 *Acre Environmental Consulting, LLC* visited the approximate 4.14-acre site located at 240 SW Francis Lane in the City of Issaquah, Washington. The site is further located as a portion of Section 33, Township 24N, Range 6E, W.M. The parcel number for this property is 332406-9045. The purpose of this site visit was to locate regulated critical areas on and adjacent to the subject site. Surrounding land use is comprised of single-family residential development and forest land.

This western two thirds of this site contain a single family residence with a barn and associated outbuildings and infrastructure. Vegetation is generally comprised of maintained lawn, yard, and pasture. The eastern part of this property is undeveloped and forested. Mine Hill Creek, a Class 2 (non-salmonid) stream flows north through the property in a ravine with steep slopes. This ravine marks the boundary between the forested and pasture portions of the property. A mine hazard area is located in the northeastern corner of the site and extends off-site to the north. In the City of Issaquah, Class 2 streams that do not support salmonids receive a 75-foot buffer.

## **PROJECT DESCRIPTION**

The applicant is proposing a multi lot residential subdivision in the southeastern portion of this property. The proposed development has been designed to avoid all impacts to the on-site critical areas.

As part of this project the applicant is proposing to remove the existing house and associated infrastructure, including several sheds that are currently located within the buffer of Mine Hill Creek. A barn located in the mine hazard areas is also proposed to be removed. The barn is located in an area of existing, maintained pasture. Following removal of the barn this area will be restored using the grass seed mixture (or similar) recommended in this plan.

Following removal of the house and associated infrastructure from the buffer of Mine Hill Creek, this area will be restored using native trees and shrubs. This work will eliminate existing impervious surfaces from the buffer of Mine Hill Creek and will result in a total of 5,950 square feet of buffer restoration. The proposed buffer restoration is expected to increase protection to Mine Hill Creek and result in an overall increase in the level of functions and values provided by this site.

## METHODOLOGIES OF CRITICAL AREAS DETERMINATION

On March 25, 2020 *Acre Environmental Consulting, LLC* conducted a site visit to locate wetlands and streams on and adjacent to the subject site. The methods used for delineating, classifying, and rating the critical areas in the project area are consistent with current Federal, State, and City of Issaquah requirements. At the time of our March 25, 2020 site investigation, the weather was cloudy with a temperature of 39 degrees Fahrenheit.

This site was assessed for the presence of wetlands using the routine methodologies described in the U.S. Army Corps of Engineers Wetland Delineation Manual produced in 1987 and the U.S. Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region produced in May 2010 (hereinafter referred to as “the Corps Regional Supplement”). The Corps Regional Supplement is designed for concurrent use with the 1987 Corps Wetland Delineation Manual and all subsequent versions. The 2010 Regional Supplement provides technical guidance and procedures for identifying and delineating wetlands that may be subject to regulatory jurisdiction under Section 404 of the Clean Water Act. Where differences in the two documents occur, the Corps Regional Supplement takes precedence over the Corps Manual for applications in the Western Mountains, Valleys, and Coast Region.

According to the federal methodologies described above, identification of wetlands is based on a three-factor approach involving indicators of hydrophytic vegetation, hydric soils, and the presence or evidence of persistent hydrology. Except where noted in the manuals, the three-factor approach discussed above requires positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology, to make a determination that an area is a regulated wetland. Using the aforementioned manuals, the procedure for making a wetland determination include the following:

- 1.) Examination of the site for hydrophytic vegetation (species present/percent cover);
- 2.) Examination for the presence of hydric soils in areas where hydrophytic vegetation is present; and
- 3.) The final step is determining if wetland hydrology exists in the area examined under the first two steps.

Per industry standards, *Acre Environmental Consulting, LLC* examined the entire project site. Per current City of Issaquah requirements, *Acre Environmental Consulting, LLC* also assessed adjacent properties within 200 feet of the proposed project limits, to the maximum extent possible without entering adjacent properties. While a detailed assessment of Critical Areas on adjacent properties was not possible due to the lack of legal access, *Acre Environmental Consulting, LLC* conducted a review of all available information to assess the presence of off-site Critical Areas within 200 feet of the subject site. This review is required by the City of Issaquah

to determine if any regulated Critical Areas exist off-site which would cause associated protective buffers to extend onto the property and affect the development proposal.

In addition to on-site field reviews, *Acre Environmental Consulting, LLC* examined aerial photographs and topographical data (elevation contours) on King County's interactive mapping system (iMAP). Soil survey maps produced by the Natural Resources Conservation Service (NRCS), National Wetlands Inventory (NWI) maps produced by the U.S. Fish and Wildlife Service (USFWS), SalmonScape fish distribution maps produced by the Washington Department of Fish and Wildlife (WDFW), and StreamNet fish distribution maps produced by Pacific States Marine Fisheries Commission were also evaluated by *Acre Environmental Consulting, LLC* as part of this project consultation.

### **BOUNDARY DETERMINATION FINDINGS**

Mine Hill Creek was classified according to the U.S. Fish and Wildlife Service (USFWS) Cowardin system Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979) and rated, by class, as required by Issaquah Municipal Code, Chapter 18.10 (Environmental Protection). Buffers are also determined by this chapter.

#### **Stream A - Type 4**

**Cowardin:** Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel (R3UB1)  
**City of Issaquah Rating:** Class 2 stream (non-salmonid) 75' buffer.

Mine Hill Creek flows north through the western portion of the subject site. This stream is depicted on the City of Issaquah Location and Classification of Issaquah Streams Map as a Class 2 stream without salmonids. The Salmonscape maps produced by the Washington Department of Fish and Wildlife show this stream but do not depict fish use. The Forest Practices Application Mapping Tool produced by the Washington Department of Natural Resources depict Mine Hill Creek as a Type N water while the King County iMap maps this stream as unclassified. In the City of Issaquah, Class 2 streams that do not support salmonids receive a 75-foot buffer.

#### **Non – Wetland**

This western two thirds of this site contain a single family residence with a barn and associated outbuildings and infrastructure. Vegetation is generally comprised of maintained lawn, yard, and pasture. The eastern part of this property is undeveloped and forested. Vegetation in the pasture portion of the property is represented by scattered big leaf maple (*Acer macrophyllum*, FacU) and bitter cherry (*Prunus emarginata*, FacU) with tall fescue (*Schedonorus arundinaceus*,

Fac), orchard grass (*Dactylis glomerata*, FacU), hairy cat's-ear (*Hypochaeris radicata*, FacU), common dandelion (*Taraxacum officinale*, FacU), creeping buttercup (*Ranunculus repens*, Fac), and white clover (*Trifolium repens*, Fac), in the pasture. Vegetation in the forest is represented by a canopy of big leaf maple (*Acer macrophyllum*, FacU), western hemlock (*Tsuga heterophylla*, FacU), Douglas fir (*Pseudotsuga menziesii*, FacU), and western red cedar (*Thuja plicata*, Fac), with vine maple (*Acer circinatum*, Fac), salmonberry (*Rubus spectabilis*, Fac), osoberry (*Oemleria cerasiformis*, FacU), sword fern (*Polystichum munitum*, FacU), English ivy (*Hedera helix*, Upl), and Pacific bleeding heart (*Dicentra formosa*, FacU), in the understory. Typical soils on this site have Munsell colors ranging from very dark brown (10YR 2/2) to dark yellowish brown (10YR 4/4), with textures of sandy loam from 0 to 18 inches below the surface. Soils across the site were moist throughout the profile during our March 25, 2020 site visit.

#### **NATURAL RESOURCE CONSERVATION SERVICE SOILS DESCRIPTION:**

The Natural Resources Conservation Service (NRCS) mapped the subject property as being underlain by Kitsap silt loam, 8 to 15 percent slopes in the east and Kitsap silt loam, 15 to 30 percent slopes in the west.

The NRCS describes Kitsap silt loam as an undulating soil on low terraces of the major valleys of the area. The A horizon ranges from very dark brown to dark brown. The B horizon ranges from dark yellowish brown to dark brown and from silt loam to silty clay loam. Some areas are up to 10 percent included Alderwood gravelly sandy loam; some are up to 5 percent the very deep, sandy Indianola soils, and some are up to 5 percent the poorly drained Bellingham, Tukwila, and Seattle soils. Water flows on top of the substratum in winter. Permeability is moderate above the substratum and very slow within it. Available water capacity is moderate to moderately high.

#### **EXISTING FUNCTIONS AND VALUES**

The methodologies for this functions and values assessment are based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site stream and associated buffer but is typical for assessments of similar systems common to western Washington. Buffers serve to protect and support the functions of streams as well as provide their own wildlife habitat, water quality, and erosion control functions.

The on-site Class 2 stream provides important functions to the surrounding environment such as hydrological transport, transport of solids (suspended and dissolved), and important fish and wildlife habitat features, among other functions. The portions of the site adjacent to the stream (vegetated wetland and associated buffers, etc.) are increasingly important to manage appropriately as these areas aid in water quality and hydrologic control, resulting in cleaner water entering the stream's channel. The established trees and dense shrubs within this

riparian corridor provide valuable ecological functions. In addition to providing direct habitat for wildlife species, the trees and shrubs provide shade, and the shade provided by the vegetation aids in cooler water temperature for the species that use the stream as habitat. The roots of the trees and shrubs within this riparian corridor serve to bind the soil and aid with soil and bank stabilization, thus reducing erosion and sedimentation among the stream channel. In addition, the large trees along this corridor provide for future recruitment of large woody debris (LWD) to the stream channel. The trees in this corridor will likely fall toward the stream channel when they decay. Those trees will provide LWD to the stream, and LWD is known to increase the functions among stream channels (aids in reducing water velocity, aid in blocking sediment transport, provides local shade for fish and other aquatic species, and provides habitat for terrestrial species). In addition to the LWD recruitment, the trees and shrubs among the riparian corridor also aid in the recruitment of organic matter to the stream.

### BUFFER RESTORATION

As part of this project the applicant is proposing to remove the existing house and associated infrastructure that are currently located within the buffer of Mine Hill Creek. This work will result in a total of 5,950 square feet of buffer restoration. Buffer restoration will consist of removing all existing infrastructure and any invasive species that are present and planting 60 percent of the restoration area with native trees and 40 percent of the restoration area with native shrubs. Any disturbed soil within the buffer will be seeded with the grass seed mixture recommended in this plan. All proposed species are native to the Puget Sound region and have been selected for their benefits to wildlife and their proven success on past mitigation projects. The following native trees and shrubs are proposed to be installed within the buffer restoration area.

#### Buffer Restoration – 5,950 square feet

Common Name	Latin Name	Size	Spacing	Quantity
Western red cedar	<i>Thuja plicata</i>	1 gallon	10'	18
Douglas fir	<i>Pseudotsuga menziesii</i>	1 gallon	10'	18
Hazelnut	<i>Corylus cornuta</i>	1 gallon	5'	20
Osoberry	<i>Oemleria cerasiformis</i>	1 gallon	5'	20
Baldhip rose	<i>Rosa gymnocarpa</i>	1 gallon	5'	20
Snowberry	<i>Symphoricarpos albus</i>	1 gallon	5'	20
Oregon grape	<i>Mahonia nervosa</i>	1 gallon	5'	20

## GRASS SEEDING

Any disturbed soil in critical areas or buffers shall be seeded to the recommended grass seed mixtures below, or similar approved mixtures.

Common Name	Latin Name	lbs/1,000 sf
Tall fescue	<i>Festuca arundinacea</i>	0.4
Colonial bentgrass	<i>Agrostis tenuis</i>	0.4
Annual ryegrass	<i>Lolium multiflorum</i>	0.5
Red clover	<i>Trifolium pratense</i>	0.2

## PLANTING NOTES

Wetland and buffer mitigation projects are typically more complex to install than can be described in plans. Careful monitoring by a professional wetland scientist for all portions of this project is strongly recommended. Timing and sequencing is important to the success of this type of project.

Plant in the early spring or late fall. Order plants from a reputable nursery. Care and handling of plant materials is extremely important to the overall success of the project. All plant materials recommended in this plan should be available from local and regional sources, depending on seasonal demand. Some limited species substitution may be allowed, only with the agreement of the consulting wetland professional.

The plants shall be arranged with the appropriate numbers, sizes, species, and distribution to achieve the required vegetation coverage. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area.

**Colored surveyors ribbon**, or other approved marking device shall be placed next to each planted tree and shrub to assist in locating the plants while removing the competing non-native vegetation and to assist in monitoring the plantings.

**Wood chips** or other suitable material shall be used for mulching in the planting areas. Any existing vegetation is to be removed from a two-foot diameter area at each planting site. Mulch is to be placed in this two-foot diameter area at a depth of three to four inches. A four-inch diameter ring around the base of each plant shall be kept free of mulch.

**Water** should be provided during the dry season (July 1 through October 15) for the first two years after installation to insure plant survival and establishment. A temporary above ground

irrigation system and/or water truck should provide water. Water should be applied at a rate of 1 inch of water twice per week for year one and 1 inch per week during year two.

## **PROJECT SUCCESS AND COMPLIANCE**

**Goals and Objectives of the Proposed Mitigation:** The primary goals of the proposed mitigation are as follow:

- Restore impacts resultant from past legal residential use of the stream buffer;
- Restore vegetation within the buffer restoration area to native trees and shrubs; and
- Restore the water quality and stormwater storage functions provided by the subject buffer.

**Definition of Success:** The planting areas shall meet the following performance standards:

- a) Year 1: 100 percent survival of newly planted species,
- b) Year 3: at least 80 percent survival of installed plant species,
- c) Year 5: at least 80 percent survival of installed plant species,

This mitigation plan shall support at least 80% of the native plants set forth in the approved mitigation plan by the end of five years. The species mix should resemble that proposed in the planting plans, but strict adherence to obtaining all of the species shall not be a criterion for success.

### **Performance Standards:**

Performance Standard 1: There shall be 100 percent survival of all the plantings after Year 1 or the installation contractor shall replace the material. At least 80 percent of the plant material installed shall survive in Year 5 after installation.

Performance Standard 2: There shall be a minimum of 30 percent cover of woody species (shrub and tree canopy layers considered together) in the buffer after the first year post-installation; and a minimum of 50 percent cover by woody material after the third year post-installation; and a minimum of 80 percent cover by woody material after the fifth year post-installation. Naturally occurring, native plants shall be included in the calculation of vegetation coverage.

Performance Standard 3: There shall be no more than 20 percent cover of weedy/invasive species in the mitigation areas at any time throughout the monitoring period.

If the project meets all of the criteria for success at the end of the five-year monitoring period, no further action will be required and the financial guarantee will be returned to the applicant in full. If the definition of success is not met for any reason at the end of the five-year monitoring period, the maintenance and monitoring period will be extended for one year at a time until the site meets the stated performance standards. This mitigation plan and the accompanying maintenance and monitoring will not be considered fully complete until written confirmation is received from the City of Issaquah.

### **PROJECT MONITORING PROGRAM**

Requirements for monitoring project:

1. Initial compliance report
2. Annual site inspections (in the fall) for five years
3. Annual reports (One report submitted in the fall of each monitored year)

#### Purpose of Monitoring:

The purpose of monitoring this mitigation project is to evaluate the success of the mitigation plantings. Success will be determined if monitoring shows that at the end of five years the stated performance standards are being met. The property owner shall grant access to the site for inspection and maintenance to the contracted wetland specialist and to the City of Issaquah during the period of the bond or until the project is evaluated as successful.

#### Inspection Schedule:

Upon completion of the mitigation project, an inspection by a qualified wetland biologist will be made to determine plan compliance. An "As Built" report will be supplied to the City of Issaquah regarding the completeness of the project. Condition monitoring of the plantings will be done by a qualified wetland biologist in the fall annually for the five-year monitoring period. A written report describing the monitoring results will be submitted to the City of Issaquah shortly after the inspection of each monitored year. Final inspection will occur five years after completion of planting. The contracted wetland professional will prepare a final report as to the success of the project.

### **MAINTENANCE**

The mitigation areas will require periodic maintenance to remove undesirable species and replace plant mortality. The planting areas should be maintained in spring and fall of each year for the five-year monitoring period. Maintenance may include, but will not be limited to, removal of competing grasses and invasive species (by hand if necessary), irrigation, replacement of plant mortality, and the replacement of mulch for each maintenance period.

Following each monitoring visit, the project biologist will make recommendations for maintenance.

#### **CONTINGENCY PLAN**

If 20% of the plants are severely stressed during any of the inspections, or it appears 20% may not survive, additional plantings of the same species may be added to the planting area. Elements of a contingency plan may include, but will not be limited to: more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, fertilization, soil amendments, and/or irrigation.

#### **PERFORMANCE BONDING**

A maintenance/monitoring bond shall be provided to the City of Issaquah for the period of five years from the completion of the project installation, in the amount of fifty (50) percent of the estimated maintenance and monitoring cost. The City of Issaquah shall release this bond at the end of five years, only upon successful determination for all portions of this mitigation project. The following is an estimate of maintenance and monitoring costs for this project:

ESTIMATED COST OF MAINTENANCE @ \$900 PER YEAR	\$4,500.00
ESTIMATED COST OF MONITORING @ \$1,000 PER YEAR	\$5,000.00
TOTAL ESTIMATED COSTS	\$9,500.00

**TOTAL BOND AMOUNT (50% OF ESTIMATED MAINTENANCE & MONITORING COSTS)**  
**\$4,750.00**

#### **POST-PROJECT FUNCTIONS AND VALUES**

The proposed development has been designed to avoid all impacts to the on-site critical areas. As part of this project the applicant is proposing to restore a total of 5,950 square feet of the buffer of Mine Hill Creek that currently contains a single-family home and associated infrastructure. Buffer restoration will consist of removing all existing infrastructure and planting the mitigation area with native trees and shrubs. The proposed buffer restoration is expected to increase protection to Mine Hill Creek and result in an overall increase in the level of functions and values provided by this site.

## TERMS & CONDITIONS

The environmental consulting work conducted, including this Critical Areas Study and Buffer Mitigation Plan (collectively the “Services”) is supplied to James A. Edwards (the “Client”) as a means of determining whether any wetlands, streams, and/or fish and wildlife habitats regulated by the City of Issaquah Critical Areas Regulations exist on, or adjacent to the site. The Services are provided in accordance with the following General Terms and Conditions (the “Terms”). In accepting the Services provided by *Acre Environmental Consulting, LLC* (“Acre”), the Client voluntarily enters into and agrees to the binding effect of the following Terms.

This report is intended to provide information deemed relevant in the Client's attempt to comply with the regulations currently in effect. The work for this report has conformed to the standard of care employed by professional ecologists in the Pacific Northwest. All other representations or warranties, whether express or implied, are hereby disclaimed concerning the work or this report. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. If such conditions exist or arise, the information contained in this report may be rendered inaccurate or incomplete based upon those conditions. Acre acts solely as an independent contractor in providing the Services to the Client, and nothing in the provision of such Services shall be construed as creating an agency, partnership, joint venture or other similar legal relationship between Acre and the Client.

Please note that Acre did not provide detailed analyses of other permitting requirements not discussed in this report (i.e., structural, drainage, geotechnical, or engineering requirements).

The laws applicable to Critical Areas are subject to varying interpretations. While Acre observed professional industry standards when completing this review, the information included in this report does not guarantee approval by any federal, state, and/or local permitting agencies. Therefore, all work on this property should not commence until permits have been obtained from all applicable agencies.

If there are any questions regarding this report, please contact me at 206.450.7746.

*Acre Environmental Consulting, LLC.*



Louis Emenhiser  
Principal Wetland Ecologist  
Professional Wetland Scientist #1680

## REFERENCES

City of Issaquah Municipal Code: Environmental Protection, Chapter 18.10. Issaquah, Washington.

Cowardin, et al, 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S.D.I. Fish and Wildlife Service. FWS/OBS-79/31. December 1979.

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Hruby, T. 2014. Washington State wetland rating system for western Washington – 2014 Update. Publication #14-06-029. Olympia, WA: Washington Department of Ecology

King County iMAP: Interactive Mapping Tool. Administered by the King County GIS Center. <https://gismaps.kingcounty.gov/iMap/>. Website viewed for project on May 22, 2020.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

SalmonScape. Interactive Mapping website administered by the Washington Department of Fish and Wildlife. <http://wdfw.wa.gov/mapping/salmonscape/index.html>. Website last visited on May 22, 2020.

StreamNet. Fish Data for the Northwest. Administered by the Pacific States Marine Fisheries Commission. <http://www.streamnet.org/>. Website last visited on May 22, 2020.

U.S. Army Corps of Engineers (2010). "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)," ERDC/EL TR-10-3, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

U.S. Fish and Wildlife Service. National Wetlands Inventory Wetlands Mapper. <http://107.20.228.18/Wetlands/WetlandsMapper.html#>. Last modified May 1, 2020. Website last visited on May 22, 2020.

Web Soil Survey. United States Department of Agriculture. Natural Resources Conservation Service. <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Website last visited on May 22, 2020.

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 240 SW Francis Lane City/County: Issaquah / King County Sampling Date: 03.25.20  
 Applicant/Owner: LDC / James Edwards State: WA Sampling Point: DP1  
 Investigator(s): Louis Emehiser Section, Township, Range: S13, T28N, R4E, W.M.  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 3 %  
 Subregion (LRR): LRR-A Lat: 47.525268 Long: -122.039539 Datum: \_\_\_\_\_  
 Soil Map Unit Name: Kitsap silt loam, 8 to 15 percent slopes. NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:  Non-wetland in the pasture in the eastern portion of the property.	

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 meters</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Acer macrophyllum</u>	<u>30</u>	<u>Y</u>	<u>FacU</u>	
2. <u>Prunus emarginata</u>	<u>5</u>	<u>Y</u>	<u>FacU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>35</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10 meters</u> )				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>50</u> x 3 = <u>150</u> FACU species <u>85</u> x 4 = <u>340</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>135</u> (A) <u>490</u> (B)  Prevalence Index = B/A = <u>3.62</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>1 meter</u> )				
1. <u>Schedonorus arundinaceus</u>	<u>40</u>	<u>Y</u>	<u>Fac</u>	Hydrophytic Vegetation Indicators: ____ Dominance Test is >50% Prevalence Index is $\bar{A}3.0^1$ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ____ Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Dactylis glomerata</u>	<u>40</u>	<u>Y</u>	<u>FacU</u>	
3. <u>Hypochaeris radicata</u>	<u>5</u>	<u>N</u>	<u>FacU</u>	
4. <u>Taraxacum officinale</u>	<u>5</u>	<u>N</u>	<u>FacU</u>	
5. <u>Ranunculus repens</u>	<u>5</u>	<u>N</u>	<u>Fac</u>	
6. <u>Trifolium repens</u>	<u>5</u>	<u>N</u>	<u>Fac</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>100</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5</u>				
Remarks:				

## SOIL

Sampling Point: DP1

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- |                                       |   |
|---------------------------------------|---|
| ___ Histosol (A1)                     | Sandy Redox (S5)                                  |
| ___ Histic Epipedon (A2)              | Stripped Matrix (S6)                              |
| ___ Black Histic (A3)                 | Loamy Mucky Mineral (F1) ( <b>except MLRA 1</b> ) |
| ___ Hydrogen Sulfide (A4)             | Loamy Gleyed Matrix (F2)                          |
| ___ Depleted Below Dark Surface (A11) | Depleted Matrix (F3)                              |
| ___ Thick Dark Surface (A12)          | Redox Dark Surface (F6)                           |
| ___ Sandy Mucky Mineral (S1)          | Depleted Dark Surface (F7)                        |
| ___ Sandy Gleyed Matrix (S4)          | Redox Depressions (F8)                            |

- \_\_\_ 2 cm Muck (A10)  
 \_\_\_ Red Parent Material (TF2)  
 \_\_\_ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No ✓

Remarks:

## HYDROLOGY

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9) <b>(except MLRA</b>  |
| <input type="checkbox"/> High Water Table (A2)                     | <b>1, 2, 4A, and 4B)</b>  |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Salt Crust (B11)                               |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Aquatic Invertebrates (B13)                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                     |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)  |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Presence of Reduced Iron (C4)                  |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)     |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Stunted or Stressed Plants (D1) <b>(LRR A)</b> |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks)                     |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |   |

Secondary Indicators (2 or more required)

- \_\_\_ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- \_\_\_ Drainage Patterns (B10)
- \_\_\_ Dry-Season Water Table (C2)
- \_\_\_ Saturation Visible on Aerial Imagery (C9)
- \_\_\_ Geomorphic Position (D2)
- \_\_\_ Shallow Aquitard (D3)
- \_\_\_ FAC-Neutral Test (D5)
- \_\_\_ Raised Ant Mounds (D6) (**LRR A**)
- \_\_\_ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present?      Yes      No    ☒      Depth (inches):

Saturation Present? Yes \_\_\_\_\_ No ✓ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes                      No    ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 240 SW Francis Lane City/County: Issaquah / King County Sampling Date: 03.25.20  
 Applicant/Owner: LDC / James Edwards State: WA Sampling Point: DP2  
 Investigator(s): Louis Emehiser Section, Township, Range: S13, T28N, R4E, W.M.  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 15 %  
 Subregion (LRR): LRR-A Lat: 47.525364 Long: -122.041324 Datum: \_\_\_\_\_  
 Soil Map Unit Name: Kitsap silt loam, 15 to 30 percent slopes. NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:  Non-wetland in the pasture in the eastern portion of the property.	

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 meters</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>28</u> (A/B)
1. <u>Acer macrophyllum</u>	<u>70</u>	<u>Y</u>	<u>FacU</u>	
2. <u>Tsuga heterophylla</u>	<u>5</u>	<u>Y</u>	<u>FacU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>60</u> x 3 = <u>180</u> FACU species <u>135</u> x 4 = <u>540</u> UPL species <u>30</u> x 5 = <u>150</u> Column Totals: <u>225</u> (A) <u>870</u> (B) Prevalence Index = B/A = <u>3.86</u>
<u>75</u> = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: <u>10 meters</u> )				
1. <u>Acer circinatum</u>	<u>30</u>	<u>Y</u>	<u>Fac</u>	
2. <u>Rubus spectabilis</u>	<u>30</u>	<u>Y</u>	<u>Fac</u>	<b>Hydrophytic Vegetation Indicators:</b> _____ Dominance Test is >50% _____ Prevalence Index is $\bar{A}3.0^1$ _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <u>Oemleria cerasiformis</u>	<u>30</u>	<u>Y</u>	<u>FacU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>90</u> = Total Cover				
<b>Herb Stratum</b> (Plot size: <u>1 meter</u> )				
1. <u>Hedera helix</u>	<u>30</u>	<u>Y</u>	<u>Upl</u>	
2. <u>Polystichum munitum</u>	<u>20</u>	<u>Y</u>	<u>FacU</u>	
3. <u>Dicentra formosa</u>	<u>10</u>	<u>N</u>	<u>FacU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>60</u> = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____)				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>2</u>				
Remarks:				

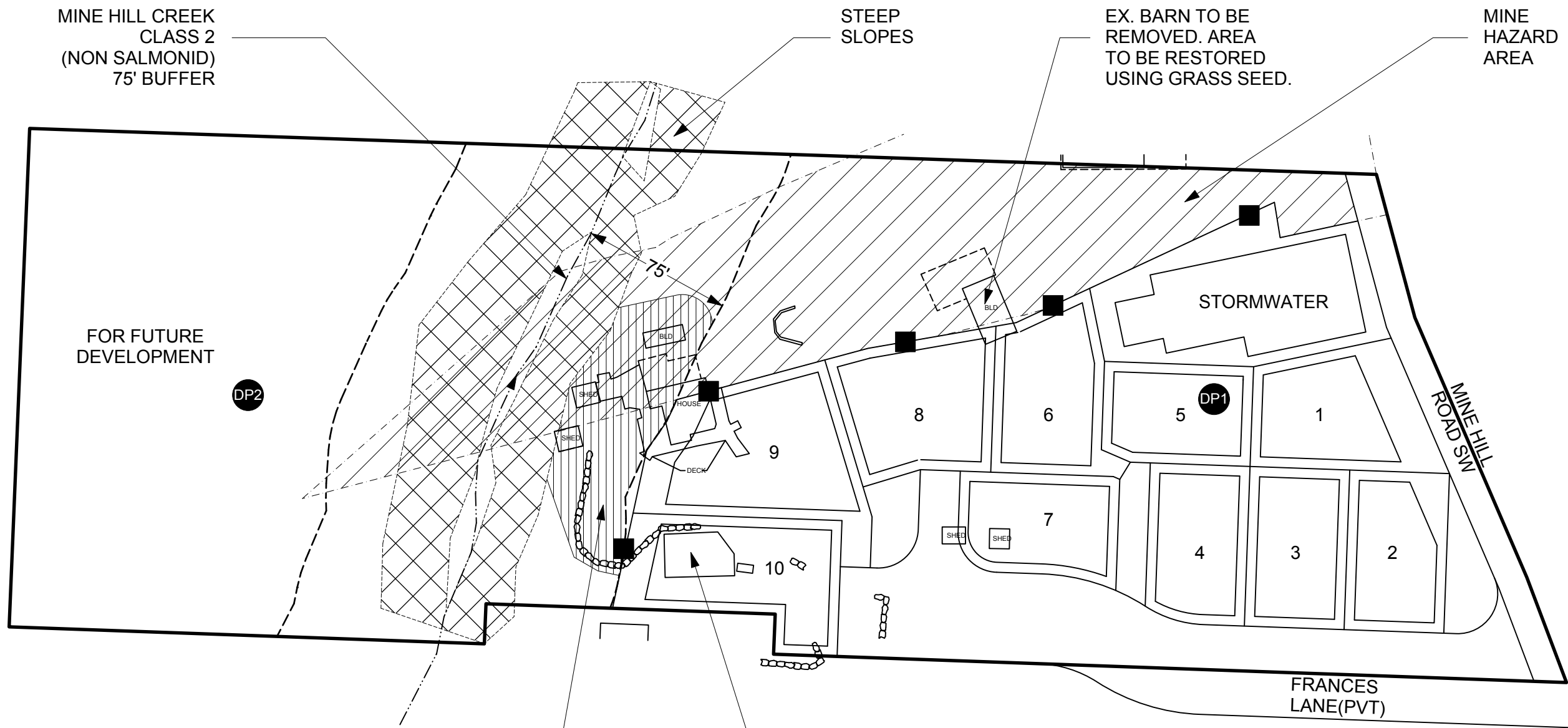
## SOIL

Sampling Point: DP2

[illegible]

## HYDROLOGY

Wetland Hydrology Indicators:			Wetland Hydrology Indicators	
<b>Primary Indicators (minimum of one required; check all that apply)</b>			<b>Secondary Indicators (2 or more required)</b>	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>except MLRA 1, 2, 4A, and 4B</b> ) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> ) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>MLRA 1, 2, 4A, and 4B</b> ) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> ) <input type="checkbox"/> Frost-Heave Hummocks (D7)		
<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				



**LEGEND**

STREAM

BUFFER

MINE HAZARD AREA

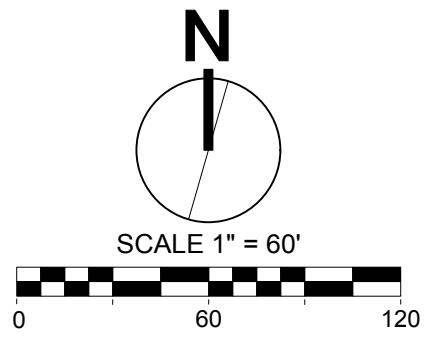
STEEP SLOPES

BUFFER RESTORATION


DP1

DATA POINT (2 TOTAL)

CRITICAL AREA SIGN



MAP SHEET: CA1.00



PREPARED BY:

Acre Environmental Consulting, LLC  
17715 28th Avenue NE  
Lake Forest Park, WA 98155  
Phone: (206) 450-7746  
Email: louis@acreenvironmental.com

CRITICAL AREA STUDY & MITIGATION MAP

240 SW FRANCIS LANE  
ISSAQUAH, WA  
TAX PARCEL NO. 332406-9045.

PREPARED FOR:

James Edwards  
c/o LDC, Inc.  
1851 Central Place S, Suite 101  
Kent, WA 98038

Acre Job: 20013

Drawn By:  
L. Emerhiser

Date: 07.15.2020

Rev: